Water-Harvesting Catchment (No.)

Definition

A facility for collecting and storing precipitation.

Scope

This standard applies to the sealing of watersheds or contributing areas to increase, collect, and store runoff water for future use. It also applies to simple curbs and diversions constructed to collect and store runoff from such high runoff areas as rock outcrops or existing paved or impervious areas.

Purpose

To provide water for livestock, fish and wildlife, recreation, or other purposes.

Conditions where practice applies

This practice applies to areas where there is a need for additional water. The contributing area must have a potential to furnish the quantity and quality of water required for the intended use.

Design criteria

Each water-harvesting catchment must be designed according to a plan suited to the water requirements and the site conditions. The following points shall be considered in designing water-harvesting catchments:

1. Quality and quantity of water required for the planned use.
2. Probability of filling the storage area or basin.
3. Area of apron needed for the required water yield.
4. Materials and method required to insure that the apron is smooth and impervious. Earth, treated earth, wax, rubber, plastic, asphalt, concrete, steel, and other such suitable materials are acceptable for this purpose.
5. Provisions for diverting foreign runoff from the catchment area to prevent damage and excessive sedimentation.
6. Provisions for protecting the apron from damage by runoff in excess of that needed to maintain the design capacity of the conveyance system. An overflow pipe or an emergency spillway can be used.
7. Need for a sediment trap between the apron and the storage basin.
8. A storage basin that is adequate in size, impermeability, and durability for the required water. Earth basins and tanks of steel, concrete, Butyl rubber, and similar facilities are acceptable. Earth dams must have at least 1 ft of freeboard above design high water. All storage basins must be protected from 10-year-frequency storms. An overflow device must be installed in all storage basins.
9. Need for evaporation repressants, such as rock filling and floating covers.
10. Adequate protection to prevent damage from weather, animals, vandals, wildlife, and traffic. Fencing may be necessary.
11. Provisions for maintaining the apron, the conveyance system, the overflow device, and the storage basin.

Plans and specifications

Plans and specifications for water-harvesting catchments shall be in keeping with this standard and shall describe the requirements for installing the practice to achieve its intended purpose.

Water-Harvesting Catchment Specifications

The work area shall be cleared of all trees, stumps, roots, brush, rocks, debris, and vegetation that can interfere with proper installation of the system. Waste materials shall be disposed of in a manner that maintains or improves the quality of the environment. Fine-grained materials may be added to the area if required by the method of sealing to be used. A soil sterilant shall be added if necessary.

The area shall be compacted, as required, to provide adequate support to the planned system.

Surfacing materials shall be applied according to the manufacturer's recommendations. All materials shall meet quality requirements.

Water-harvesting catchments shall be installed to line and grade and cross section. Overfill shall be added to provide for anticipated settlement.

The completed job shall present a workmanlike appearance. Fencing and a protective cover shall be used to control erosion and pollution.

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Planning considerations for water quantity and quality

Quantity

1. Effects of trapping or catching of water on surface and ground water. Factors include changes in evaporation, timing of releases from the catchment, and the impact of the type of catchment on surface water versus ground water decreases.

Quality

1. Potential improvement in surface water quality resulting from flow reduction's contribution to reducing erosion and sediment yield. Consider the size of the harvest area and the impact of associated structures, such as sediment traps.

2. Effects of reduced dilution water on water quality factors such as dissolved substances, waste assimilation capacity, and dissolved oxygen.

3. Effects of loss of ground water dilution and the reduction of input of dissolved salts and chemicals on ground water quality.

MONTANA SUPPLEMENT

Water-Harvesting Catchment (MT-636)

The following additional standards apply to water-harvesting catchments.

Established minimum life. 10 years

Design criteria. Fine-grained materials should be added to the area if required by the method of sealing to be used.

A soil sterilant shall be used if necessary to prevent plant damage to apron seal.

Fencing and a protective cover shall be used to control erosion and pollution.

The area should be compacted, as required, to provide adequate support to the planned system.

Provide overfill to accommodate anticipated settlement.

Plans and specifications. Plans and specifications are to be approved for each installation by an individual having design approval authority for the project.

Montana Construction Specification MT-636 applies to this practice.